WM-2011

SERVICE MANUAL

AEP Model
UK Model
E Model

This set is almost the same as model WM-B12 previously produced.
Therefore, see the service manual for the information which is not contained in this service manual.

• PART LIST (The difference between WM-B12 and WM-2011)

WM-B12			WM-2011	
Page	No.	Part No.	Part No.	Description
	18	3-351-510-01	3-351-510-61	CABINET (FRONT) (TC-A)
	19	X-3346-708-1	X-3349-149-1	(BLACK)··· HOLDER ASSY (B), CASSETTE
		X-3346-709-1	X-3349-150-1	(RED) ····· HOLDER ASSY (R), CASSETTE
		X-3346-710-1	X-3349-151-1	(BLUE) ··· HOLDER ASSY (L), CASSETTE
11		X-3346-797-2	X-3349-152-1	(GRAY) ··· HOLDER ASSY (G), CASSETTE
	33	3-351-511-11	3-351-511-61	(RED) ····· CABINET (REAR) (TC-B)
		————	3-351-511-71	(GRAY) ··· CABINET (REAR) (TC-B)
	34	3-346-517-61	3-357-436-61	(RED) ····· LID, BATTERY
		————	3-357-436-11	(GRAY) ··· LID, BATTERY
	—	————	*3-357-426-01	LABEL, MODEL NUMBER
12		*3-348-495-01 *3-348-497-01 }	*3-357-417-01	INDIVIDUAL CARTON
		*3-348-491-01	*3-357-419-01	CUSHION (UPPER)
		3-786-983-21 3-786-983-41 }	3-751-404-11	MANUAL INSTRUCTION

CASSETTE PLAYER

SONY®

MICROFILM
9-955-730-11

Sony Corporation
Audio Group

English
90B0464-1
Printed in Japan
© 1990. 2
Published by Customer Relations and Service Group

WM-A12/B12

SERVICE MANUAL

Photo: WM-A12

US Model
Canadian Model
WM-A12
West Germany Model
UK Model
E Model
WM-B12

Model Name Using Similar Mechanism	WM-A10/B10
Tape Transport Mechanism Type	MT-WMA12-04

SPECIFICATIONS

Power requirements 3 V DC Batteries R6 (AA) × 2
BP-700 rechargeable battery
External DC 3 V power sources

Battery life (Approximate hours)

Sony Alkaline AM3 (N)	8 hrs.
Rechargeable BP-700	2 hrs.

Accessories supplied Stereo headphones (1) Beltclip (1)
Battery tube (1)

Optional accessories Rechargeable battery (BP-700)/charger (BC-700) kit BPC-700K*
AC power adaptor AC-D2L
Car battery cord DCC-70
Battery case EBP-500B
Stereo active speaker system SRS-30, SRS-50

Design and specifications subject to change without notice.

MICROFILM

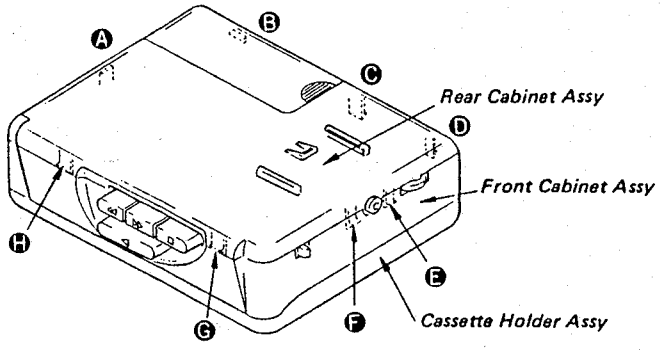
CASSETTE PLAYER

SONY®

SECTION 1
DISASSEMBLY

Location and shape of claws

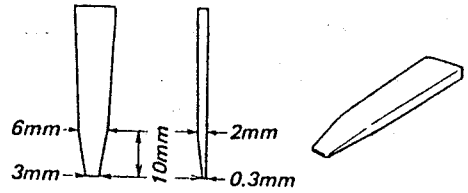
The symbols (Ⓐ – Ⓗ) show the order to uncouple the linkage of the claw, and names of the parts.



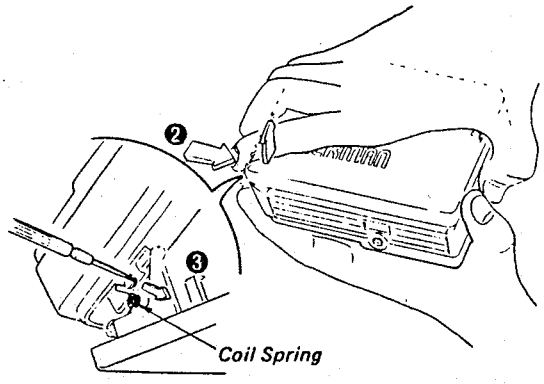
Note: Follow the disassembly procedure the numerical order given.

Tools: Precision Screwdrivers (⊖ , width 0.8mm, 1.4mm, and 2.0mm)
Adhesive tape 1–2cm
Wedge (hand made)

Material . . . soft plastic (such as PVC) etc.
Sizes are for the reference.



[1] Cassette Holder Removal

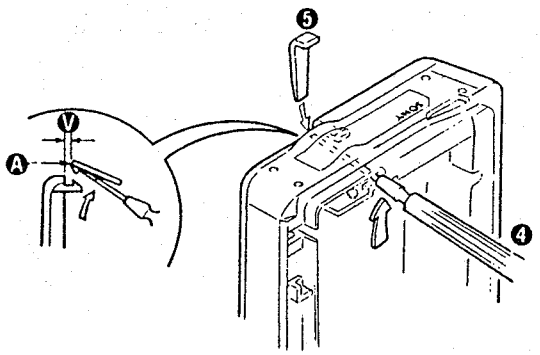


❶ Open the cassette holder.

❷ While pressing the edge of the cassette holder, pull up it in order to take off the cassette holder.

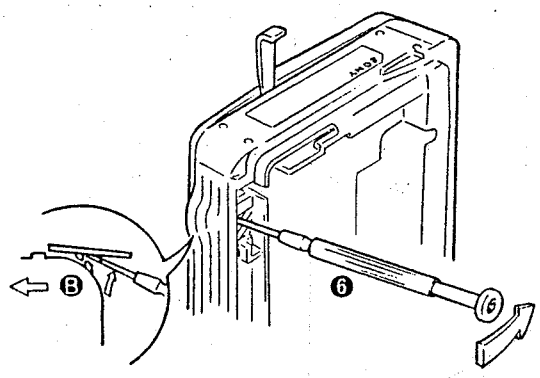
❸ Take off the end of coil spring with a precision screwdriver (width: 0.8mm).

[2] Rear Cabinet Removal

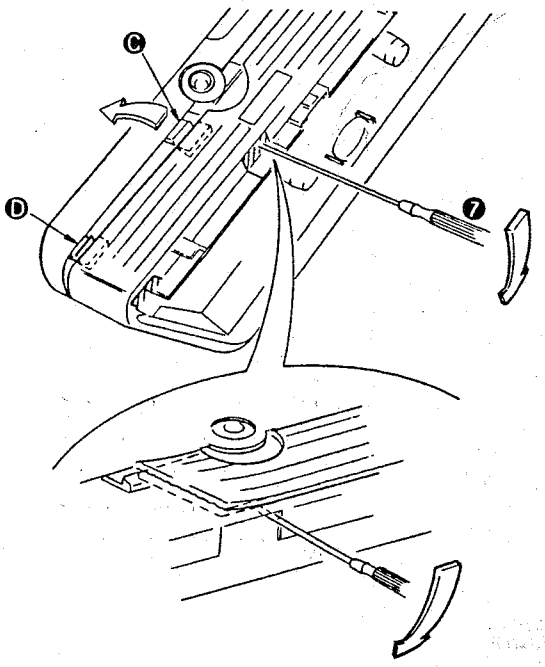


❹ Insert a precision screwdriver (width: 2.0mm) into the slit of front cabinet, lift the front cabinet as shown in the figure for making a clearance (Ⓥ).

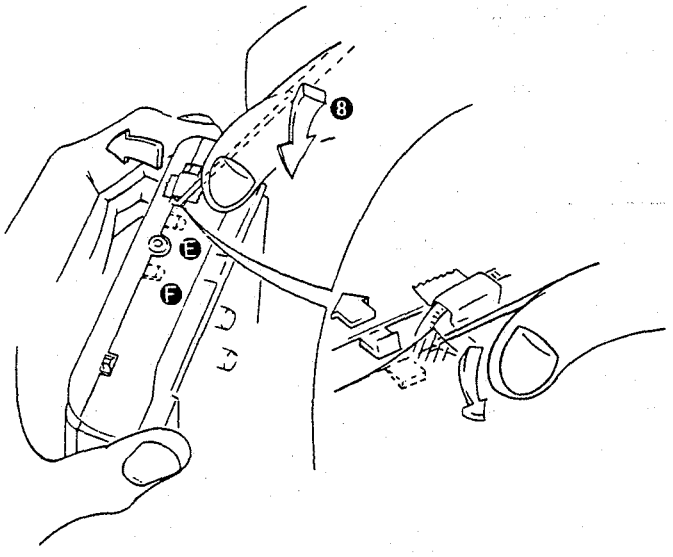
❺ Insert a wedge in the clearance.

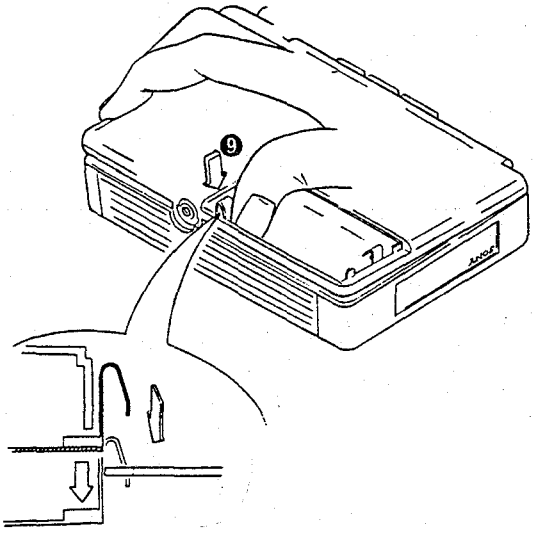


❻ Insert a precision screwdriver (width: 2.0mm), and lift the front cabinet so that the claw Ⓑ comes off.



❼ In a similar way as procedure ❻ , uncouple the linkage of the claw Ⓒ and Ⓓ.



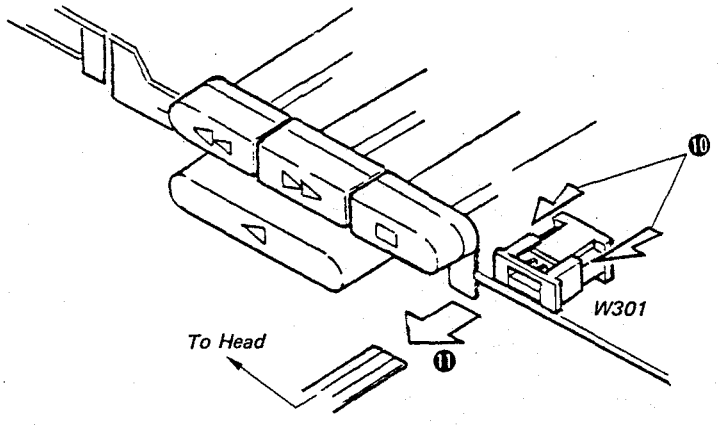


❽ Put a adhesive tape on the volume for protection. Insert a precision screwdriver (width: 1.4 mm) and lift the shaded portion, so that the claw Ⓔ and Ⓕ come off.

CAUTION: Be sure not to touch the volume knob, when inserting precision screwdriver.

❾ Press down the battery terminals in order to leave Mounted PCB in the rear cabinet, and then remove the rear cabinet.

[3] Head Flexible Board Removal



SECTION 2
MECHANICAL AND ELECTRICAL ADJUSTMENTS

MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab :
   playback head　　pinch roller
   capstan　　idlers
   rubber belts
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Torque	Meter Reading	Torque Meter
Foward	22-45g · cm (0.31-0.63oz · inch)	CQ-102C
Fast Forwand	55-130g · cm (0.77-1.82oz · inch)	CQ-201B
Rewind	55-150g · cm (0.77-2.1oz · inch)	CQ-201B
Back Tension	1-2g · cm (0.014-0.028oz · inch)	CQ-102C

Tape Tension Measurement

Meter	Meter Reading
CQ-403A	more than 90g (1.26oz)

ELECTRICAL ADJUSTMENTS

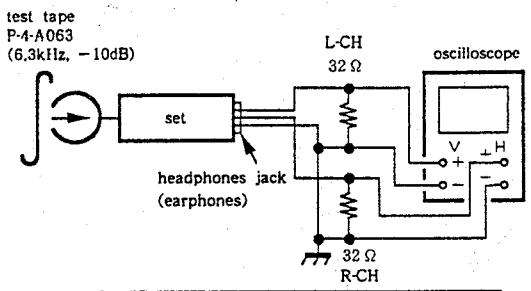
CASSETTE SECTION

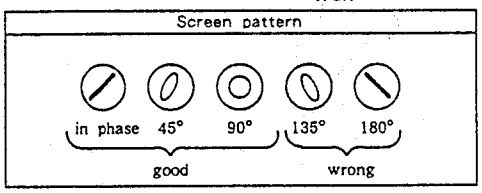
Playback Head Phase Check

Note :When replacing the head, check the both L-ch and R-ch phases.

Procedure :

Phase Check
Mode : playback

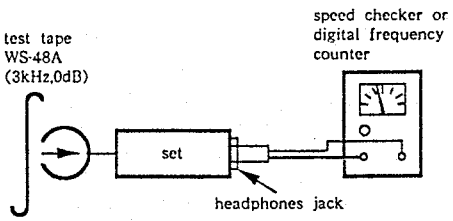




Tape Speed Adjustment

Procedure :

Mode : playback

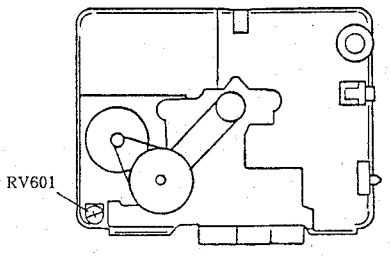


Specification :

speed checker	digital frequency counter (TAPE END)
±0.5%	2,990-3,015Hz

Frequency difference between the beginning and the end of the tape should be within ±1.5% (±45Hz).

Adjustment Location



SECTION 3
DIAGRAMS

Note:

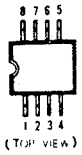
- ● : Through hole.
- ▒▒ : Pattern on the side which is seen.
- ▒▒ : Pattern of the rear side.
- [] : Printed resistors extracted from the rear side.

● Semiconductor Location

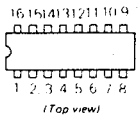
Ref. No.	Location
IC301	D-10
IC601	D-2

● Semiconductor Lead Layouts

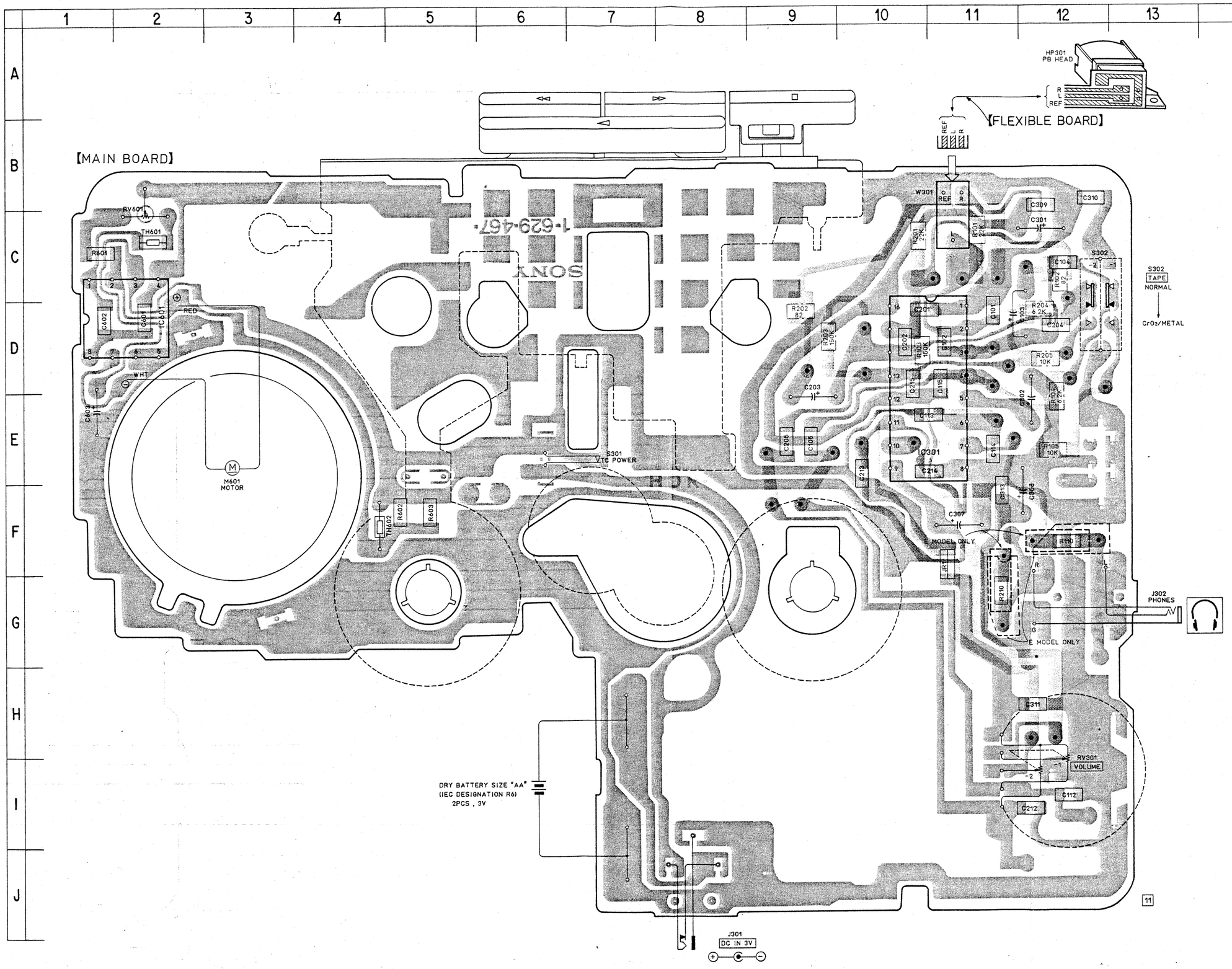
AN6650

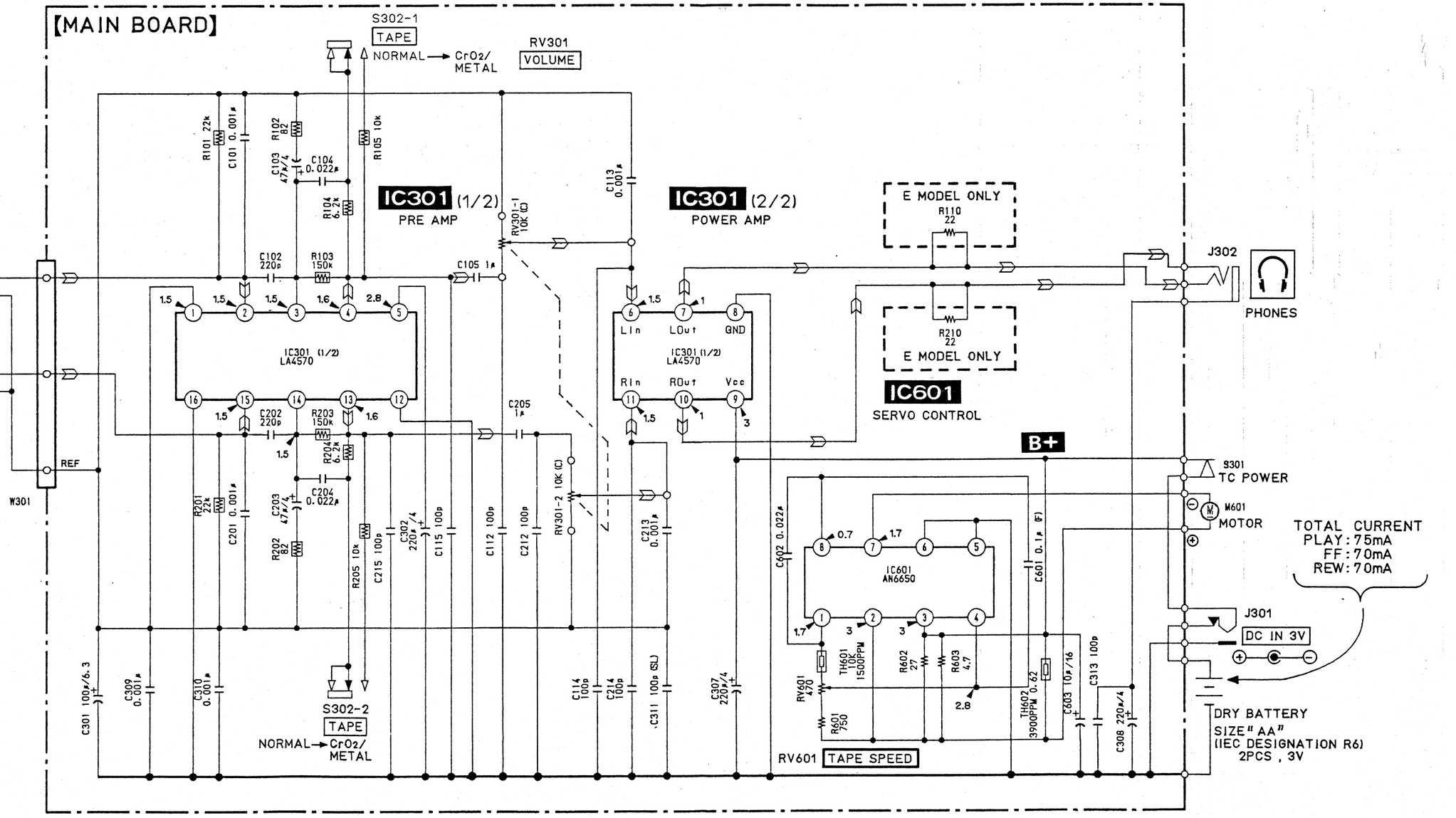


LA4570



3-1. PRINTED WIRING BOARDS





Note:

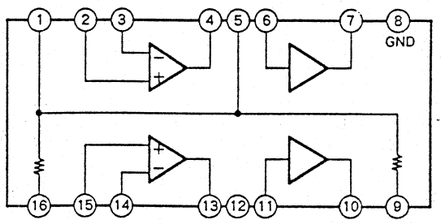
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/8 W or less unless otherwise specified.
- △ : internal component.
- ▭ : printed resistor.
- Switch

Ref. No.	Switch	Position
S301	TC POWER	OFF
S302	TAPE	NORMAL

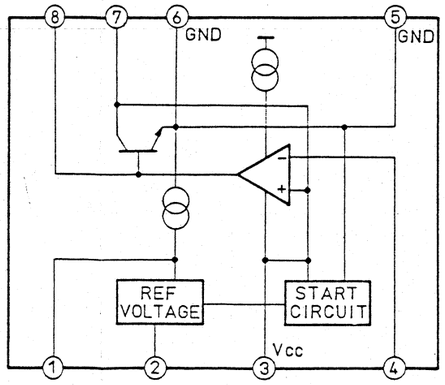
- ▭ : adjustment for repair.
- Total current is measured with no cassette installed.
- Voltage and waveforms are dc with respect to ground in playback mode.
  no mark: PB
- Voltages are taken with a VOM (input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ▷ : PB

• IC Block Diagrams

IC301 LA4570M



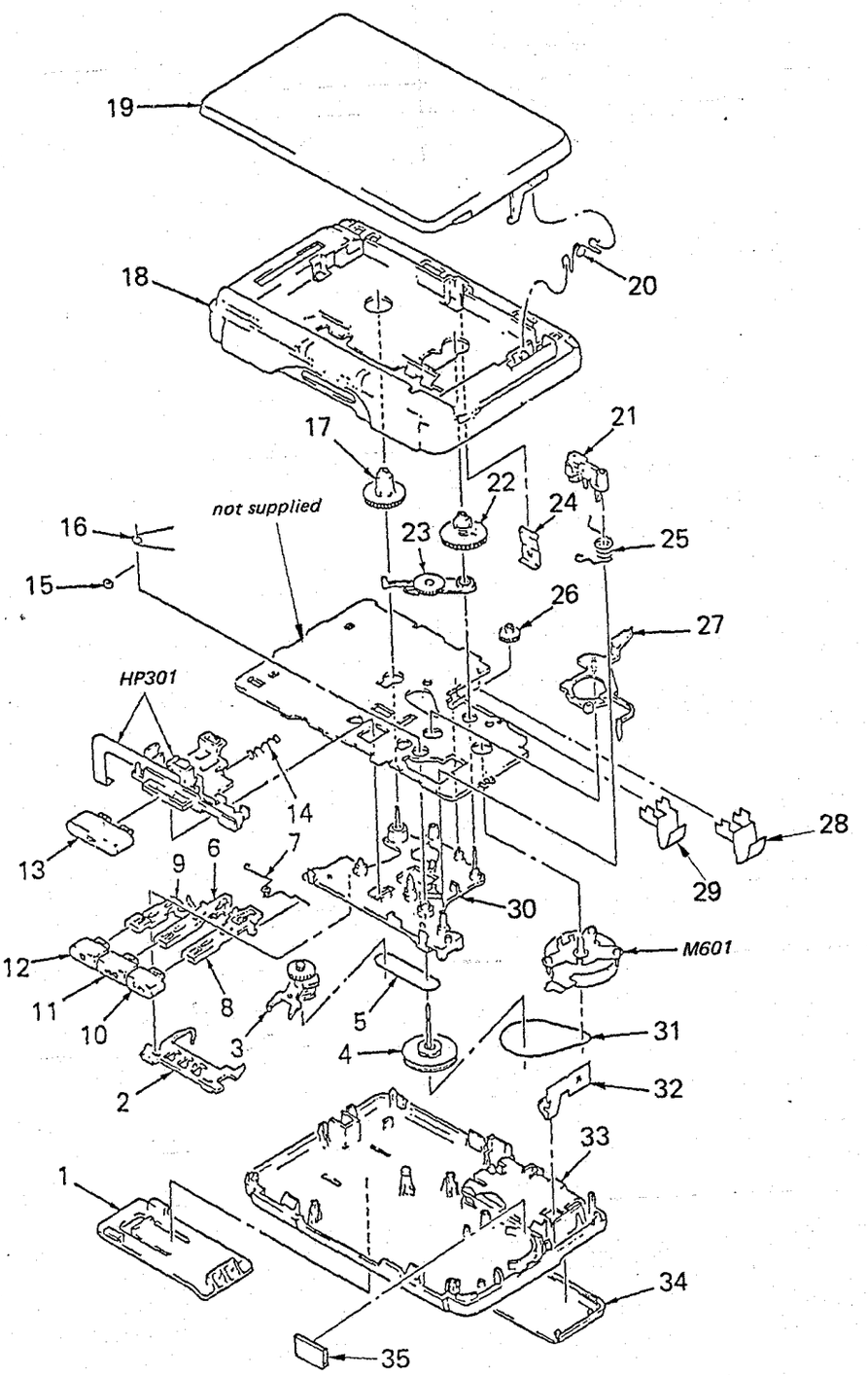
IC601 AN6650



SECTION 4
EXPLODED VIEW

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color
  ↑ Parts Color



No.	Part No.	Description	Remarks
1	3-346-518-01	CLIP, BELT	
2	3-346-522-01	PLATE, LOCK	
3	X-3346-503-1	GEAR ASSY, MIDWAY	
4	X-3346-505-1	WHEEL ASSY, CAPSTAN	
5	3-335-604-01	BELT, MIDWAY	
6	3-346-527-01	LEVER (REW)	
7	3-346-539-01	SPRING (FR)	
8	3-346-526-01	LEVER (FF)	
9	3-346-528-01	LEVER (STOP)	
10	3-346-513-01	BUTTON (FF)	
11	3-346-514-01	BUTTON (REW)	
12	3-346-515-01	BUTTON (STOP)	
13	3-346-512-01	BUTTON (PLAY)	
14	3-335-605-01	SPRING, COMPRESSION	
15	3-343-358-01	RING, RETAINING	
16	3-346-538-01	SPRING (GROUND)	
17	3-346-525-01	GEAR (S REEL)	
18	3-351-510-01	CABINET (FRONT) (TC-A)	
19	X-3346-704-1	(A12)...HOLDER(TC-A)(1-B) ASSY, CASSETTE	
	X-3346-708-1	(B12)...HOLDER(TC-A)(2-B) ASSY, CASSETTE (BLACK)	
	X-3346-709-1	(B12)...HOLDER(TC-A)(2-R) ASSY, CASSETTE (RED)	
	X-3346-710-1	(B12)...HOLDER(TC-A)(2-L) ASSY, CASSETTE (BLU)	
20	3-346-509-01	SPRING	
21	X-3334-005-1	PINCH ROLLER ASSY	
22	X-3346-502-1	TABLE ASSY, T REEL	
23	X-3346-504-1	GEAR ASSY, PLAY	
24	3-346-516-01	SPRING	
25	3-335-608-01	SPRING	
26	3-334-089-01	GEAR, FF	
27	3-346-523-01	LEVER (SHUT-OFF)	
28	3-341-794-01	TERMINAL BOARD, MINUS	
29	3-347-109-01	TERMINAL BOARD, PLUS	
30	X-3346-536-1	BASE ASSY (B), GUIDE	
31	3-351-544-01	BELT (CAPSTAN)	
32	3-334-057-01	TERMINAL BOARD, RELAY	
33	3-351-511-01	CABINET (REAR) (TC-B)(BLACK)	
	3-351-511-11	(B12)...CABINET (REAR)(TC-B)(RED)	
	3-351-511-21	(B12)...CABINET (REAR)(TC-B)(BLU)	
34	3-346-517-01	LID, BATTERY CASE (BLACK)	
	3-346-517-61	(B12)...LID, BATTERY CASE (RED)	
	3-346-517-71	(B12)...LID, BATTERY CASE (BLU)	
35	*3-338-263-01	CUSHION (U)	
HP301	A-3108-292-A	PC BOARD ASSY, HEAD	
M601	1-541-649-21	MOTOR	

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

Ref.No.	Part No.	Description			
C101	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C102	1-163-125-00	CERAMIC CHIP	220PF	10%	50V
C103	1-124-432-00	ELECT	47MF	20%	4V
C104	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C105	1-162-611-00	CERAMIC CHIP	1MF		25V
C112	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C113	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C114	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C115	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C201	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C202	1-163-125-00	CERAMIC CHIP	220PF	10%	50V
C203	1-124-432-00	ELECT	47MF	20%	4V
C204	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C205	1-162-611-00	CERAMIC CHIP	1MF		25V
C212	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C213	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C214	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C215	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C301	1-124-225-00	ELECT	100MF	20%	6.3V
C302	1-124-434-00	ELECT	220MF	20%	4V
C307	1-124-434-00	ELECT	220MF	20%	4V
C308	1-124-434-00	ELECT	220MF	20%	4V
C309	1-163-205-00	CERAMIC CHIP	0.001MF	10%	50V
C310	1-163-205-00	CERAMIC CHIP	0.001MF	10%	50V
C311	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C313	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C601	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C602	1-163-063-00	CERAMIC CHIP	0.022MF	10%	50V
C603	1-126-157-11	ELECT	10MF	20%	16V
HP301	A-3108-292-A	PC BOARD ASSY, HEAD			
IC301	8-759-802-85	IC LA4570			
IC601	8-759-403-83	IC AN6650			
J301	1-568-228-11	JACK, EXTERNAL POWER (DC IN 3V)			
J302	1-565-287-11	JACK (PHONE)			
JR1	1-216-296-00	METAL GLAZE	0	5%	1/8W

Ref.No.	Part No.	Description			
M601	1-541-649-21	MOTOR			
R101	1-249-433-11	CARBON	22K	5%	1/32W
R102	1-249-404-00	CARBON	82	5%	1/32W
R103	1-215-473-00	CARBON	150K	5%	1/32W
R104	1-215-440-00	CARBON	6.2K	5%	1/32W
R105	1-249-429-11	CARBON	10K	5%	1/32W
R110	1-216-158-00	(B12:E)...METAL CLAZE	22	5%	1/8W
R201	1-249-433-11	CARBON	22K	5%	1/32W
R202	1-249-404-00	CARBON	82	5%	1/32W
R203	1-215-473-00	CARBON	150K	5%	1/32W
R204	1-215-440-00	CARBON	6.2K	5%	1/32W
R205	1-249-429-11	CARBON	10K	5%	1/32W
R210	1-216-158-00	(B12:E)...METAL GLAZE	750	5%	1/8W
R601	1-216-195-00	METAL GLAZE	750	5%	1/8W
R602	1-216-160-00	METAL GLAZE	27	5%	1/8W
R603	1-216-142-00	METAL GLAZE	4.7	5%	1/8W
RV301	1-238-072-11	RES, VAR, CABON 10K/10K (VOLUME)			
RV601	1-238-011-11	RES, ADJ, CARBON 470 (TAPE SPEED)			
S301	1-570-549-11	SWITCH, LEAF (POWER)			
S302	1-571-478-11	SWITCH, SLIDE (TAPE)			
TH601	1-808-664-21	THERMISTOR, POSITIVE			
TH602	1-808-680-41	THERMISTOR (POSITIVE)			
W301	*1-565-288-11	HOUSING, CONNECTOR 3P			

ACCESSORY & PACKING MATERIAL

3-786-983-11	(A12:Canadian/B12:E,UK) ....MANUAL, INSTRUCTION
3-786-983-21	(A12:US/B12:WG)...MANUAL, INSTRUCTION
3-786-983-41	(B12:WG).....MANUAL, INSTRUCTION
8-952-313-90	(A12:US).....HEADPHONE MDR-005L/B SET
8-952-350-90	(B12:E).....HEADPHONE MDR-E454 SET
8-952-447-90	(A12:Canadian/B12:WG,UK) ....HEADPHONE MDR-006L SET